# Marius M. Kästingschäfer

World Model Learning · Probabilistic Deep Learning · Representation Learning

## Education

### Radboud University
*Nijmegen, Netherlands*

M.Sc. Artificial Intelligence - Cognitive Computing (current avg. grade 8.3) *September 2019 - August 2022*

- focusing on model-based reinforcement learning, machine learning and representation learning
- courses such as: statistical machine learning, probabilistic deep learning, and bayesian networks
- advanced programming courses in Python, Matlab and C++ (experience with both PyTorch and Tensorflow)
- thesis on model-based reinforcement learning with an emphasize on the agent's goal function and long-horizon planning
- double degree with Cognitive Neuroscience

### Donders Institute for Brain, Cognition and Behaviour
*Nijmegen, Netherlands*

Research M.Sc. Cognitive Neuroscience - Neural Computation and Neurotechnology (current avg. grade 8.0) *September 2019 - August 2022*

- focusing on computational neuroscience, neural information processing and complex systems
- courses such as: adv. computational neuroscience, neuromorphic computing and modelling of complex systems
- large portion of courses from the neurophyics master (familiarity with information theory, Monte Carlo methods, mean field approximations, Ising models and the replica method)

### Leiden University
*Leiden, Netherlands*

Guest student - avg. grade 9 *September 2020 - August 2021*

- course on Reinforcement learning
- working on Monte Carlo Tree Search methods and the model-based reinforcement learning architecture Dreamer

### Maastricht University
*Maastricht, Netherlands*

B.Sc. in Psychology and Neuroscience - Cum Laude *September 2016 - August 2019*

- focusing on cognitive neuroscience, deep learning and motor control
- part of the MaRBLe excellence program
- bachelor thesis on Multi-Source Domain Adaptation

### Universitas Surabaya | Ubaya
*Surabaya, Indonesia*

Semester Abroad - avg. grade A *August 2018 - January 2019*

- among others a course on computer organization and architecture
- strengthening intercultural competence

### Johann Wolfgang Goethe-University
*Frankfurt, Germany*

B.Sc. in Economics - avg. grade 1.9 *June 2013 - September 2016*

- focusing on micro- and macroeconomics
- courses such as: mathematics, statistics, business cycle theory
- mathematical training focusing on linear algebra and differential calculus
- advanced knowledge in game theory, agency theory, economic modeling

## Experience

### Donders Institute for Brain, Cognition and Behaviour
*Nijmegen, Netherlands*

Research Intern *2021-2022*

- thesis project working with prof. dr Marcel van Gerven and Danijar Hafner from Toronto University
- working on world model learning, deep active inference, variational inference and dynamic variational autoencoders

**Radboud University - Institute for Computing and Information Sciences (iCIS)** *Nijmegen, Netherlands*

Student Assistant *2021*

- working with PhD Ioan Gabriel Bucur at the Faculty of Data Science
- working on the AutoMATE project, focusing on procedurally generated assignments
- for courses such as statistical machine learning and data mining

**Donders Institute for Brain, Cognition and Behaviour** *Nijmegen, Netherlands*

Lab rotation - Student Intern *2021*

- working with Pablo Lanillos on Active Inference notebooks for the course NeurIPS
- working with Umut Güçlü on A3C Agents

**Radboud University - Radboud Department for Artificial Intelligence** *Nijmegen, Netherlands*

Teaching Assistant *2020 - 2021*

- teaching assistant position in the course Calculus for Bachelor AI students (2021)

**Donders Institute for Brain, Cognition and Behaviour** *Nijmegen, Netherlands*

Teaching Assistant *2021*

- teaching assistant position in the course Brain for Bachelor AI students (2020 and 2021)
- teaching assistant position in the course Cognitive Computational Models (CCM) for Bachelor AI students (2021)

**Maastricht University - Faculty of Psychology and Neuroscience** *Maastricht, Netherlands*

Thesis Research *2018 - 2019*

- as part of the MaRBLe excellence program working in the Cognitive Computational Neuroscience Group Maastricht
- working on convolutional neural networks optimized for multi-modal scene recognition (as part of my bachelor thesis)
- adapting a network pretrained on the places205 dataset (natural images) for clip art and sketches implemented in Keras and Tensorflow

**Johannes Gutenberg-University - Gutenberg School of Management and Economics** *Mainz, Germany*

Research Assistant *2014*

- own research project in cooperation with the Faculty of Business and Economics at Goethe-University
- project title 'the determinants of cooperation and behavior of children in public good games'
- planning, coordination, documentation and analysis of the results during quantiative experiment about cooperation

## Poster Presentations

2020 **Interdisciplinary College (IK),** Implementing and Testing A3C in a novel Environment (cancelled) *Möhnesee*

2019 **MaRBLe,** Multi-Source Domain Adaptation: From Natural Images to Clip Art and Sketches *Maastricht*

## Grants

2021 **Google TPU grant,** Google

2020 **Donders Cognitive Neuroscience Travel Grant,** Donders Institute

2020 **Radboud Individual Travel Grant,** Radboud University

2019 **MaRBle research grant,** Maastricht University

## Skills

**Programming** Python (numpy, seaborn, scikit, jupyter, etc.), R, Matlab, HTML. Basics in Julia and C++

**DL Frameworks** Tensorflow, PyTorch and Keras

**Cloud** Experience with AWS, Deepnote, Google Colab and Google Cloud Platform

**Other** Git, LaTeX and Linux

## Other Activities

**Rent-a-Frame, Enactus** *Frankfurt, Germany*

Core Member *2013 - 2015*

- social entrepreneurship project for unaccompanied young displaced persons from Syria
- applying for funding, presentation of the project, accounting